

Lepton and Quark Flavour Structures

Report of Contributions

Contribution ID: 1

Type: **not specified**

Conceptual design report of muonium to antimuonium conversion experiment (MACE)

Thursday, 17 October 2024 09:00 (30 minutes)

The spontaneous conversion of muonium to antimuonium is one of the interesting charged lepton flavor violation phenomena, offering a sensitive probe of potential new physics and serving as a tool to constrain the parameter space beyond the Standard Model. Utilizing a high-intensity muon beam, a Michel electron magnetic spectrometer and a positron transport solenoid together with a positron detection system, MACE aims to discover or constrain this rare process at the conversion probability beyond the level of 10^{-13} . This talk will release the conceptual design report for MACE.

Primary author: TANG, Jian (Sun Yat-Sen University)

Presenter: TANG, Jian (Sun Yat-Sen University)

Contribution ID: 2

Type: **not specified**

Revealing the Origin of Neutrino Masses through Displaced Shower Searches in the CMS Muon System

Thursday, 17 October 2024 09:30 (30 minutes)

We study the potential to probe the origin of neutrino masses, by searching for long-lived right-handed neutrinos (RHNs) N in the $B - L$ model. Despite the small active-sterile mixing $|V_{\ell N}|^2$, RHNs are produced abundantly via SM and exotic Higgs production, as long as the Higgs mixing is sufficiently large. We reinterpret a search for displaced showers in the CMS muon system and we find that it is sensitive to parameter space at and below the seesaw floor, $|V_{\ell N}|^2 \approx 10^{-12}$ ($\ell = e, \tau$) for $m_N \approx 40$ GeV. With existing data constraining such a well-motivated scenario of neutrino mass generation, we determine the projected sensitivity at the HL-LHC, motivating dedicated searches for long-lived RHNs with decay lengths ≈ 10 m.

Primary author: LIU, Wei (刘威) (Nanjing University of Science and Technology (南京理工))

Presenter: LIU, Wei (刘威) (Nanjing University of Science and Technology (南京理工))

Contribution ID: 3

Type: **not specified**

Calculable neutrino Dirac mass matrix in the minimal left-right symmetric model

Friday, 18 October 2024 09:30 (30 minutes)

Based on the paper: arXiv:2404.16740 (PRD). In the context of minimal left-right symmetric model, where parity is taken as the left-right symmetry, we propose a general parametrization of the right-handed neutrino mixing matrix and construct the heavy neutrino mass matrix that maintains the Hermiticity of neutrino Dirac mass matrix. We further apply it to calculate the strong CP parameter from the leptonic CP violation at the one-loop level, which inversely constrains the heaviest sterile neutrino mass at the TeV scale.

Primary author: Prof. LI (李), Gang (刚) (Sun Yat-Sen University)

Presenter: Prof. LI (李), Gang (刚) (Sun Yat-Sen University)

Contribution ID: 4

Type: **not specified**

An SU(8) theory of the SM quarks and leptons

Friday, 18 October 2024 09:00 (30 minutes)

We propose an SU(8) theory to originate the observed SM quark/lepton mass hierarchies and the CKM mixing pattern with the non-universal embedding structure, as well as the gravitational effect.

Primary author: 陈, 宁 (Nankai University)

Presenter: 陈, 宁 (Nankai University)

Contribution ID: 7

Type: **not specified**

Probing neutrino-DM interactions at JUNO

Thursday, 17 October 2024 10:30 (30 minutes)

Presenter: 张, 永超

Contribution ID: 8

Type: **not specified**

Non-Abelian domain walls: connecting flavour symmetry to gravitational waves

Thursday, 17 October 2024 11:00 (30 minutes)

Presenter: 付, 博文

Contribution ID: 9

Type: **not specified**

自由讨论

Thursday, 17 October 2024 14:00 (4 hours)

Contribution ID: 10

Type: **not specified**

Fermion masses and mixing in SO(10) GUT with a universal two-zero texture

Friday, 18 October 2024 15:30 (30 minutes)

Presenter: 方, 高祥

Contribution ID: 11

Type: **not specified**

Some pheno aspects of modular symmetries

Friday, 18 October 2024 10:30 (30 minutes)

Presenter: 周, 也铃

Contribution ID: 12

Type: **not specified**

Discussion on modular symmetries

Friday, 18 October 2024 11:00 (30 minutes)

Contribution ID: 13

Type: **not specified**

Gravitational waves from phase transition during inflation (暴涨时期的相变引力波——开题报告)

Friday, 18 October 2024 16:00 (30 minutes)

Presenter: 胡, 禧贺